

COMMERCIALISATION

WHAT WE HAVE DONE

On 1 July 2008, Innovation Finance Ltd – the entity set up to support early-stage product development and the co-funding of IP commercialisation projects – was brought back into the parent company. IFL dealt with requests for investment under two specific funds. One was the Pre-Seed Accelerator Fund (PSAF), which provides money to accelerate the commercialisation of IRL research, including prototyping, market investigation, patenting, product certification, pre-clinical trials, and IP strategy. The other was for money from the Equity Investment Fund (EIF), which is designed to encourage external partners to enter arrangements to spread the investment risk associated with the early stages of a business's growth.

Responsibility for these recommendations has now passed to a Commercialisation Advisory Panel whose members include the CEO and senior science, commercialisation and IP staff and outside experts. The changes were made to improve the efficiency of the decision-making process and ensure consistency in dealing with funding requests. So far the result has been more efficient funding decision making and initial feedback suggests improved execution and accountability of projects funded with Pre-Seed and EIF money.

Funding criteria used include investment returns, pathway to market, ability to deliver and enhanced future commercialisation capability. In coming to its decisions, the committee seeks advice from independent external experts and there are currently five on the panel. This external combined expertise includes export markets, the food and biotech sectors, chemical engineering and materials research applications, medical technologies, venture capital and capital management, commercialisation and marketing.

During the 2008/09 financial year, the committee approved investment of \$1.92m in 22 projects.

Recent projects that have benefited from Pre-Seed funding include an agreement with a New Zealand company to license and manufacture IRL's gas de-pelter and Y-cutter technologies for the meat industry. This project was an important step in the formation of Ovine Automation Ltd, an R&D consortium involving most of New Zealand's main meat companies, which sees IRL and Millers Mechanical providing R&D to automate the meat processing industry.

In pursuing our goal of finding commercial partners for our technologies at an early stage, we have also established links internationally to assist in commercialising our R&D. IRL is part of the US-based Girvan Institute of Technology's Technology Partnership Programme. Through this programme, IRL can call on support and assistance in commercialising scientific and engineering research, including independent assessments of

technologies, opportunities to co-operate with other organisations in Girvan's network to license technology, and source and develop potential investment and business opportunities. We are also able to call on the services of the Larta Institute – another US-based company that specialises in the transfer of scientific and technological breakthroughs from the laboratory to the marketplace.

Our partnership with Taiwan's Industrial Technology Research Institute (ITRI), established during the 2008/09 year, has also been important in progress towards the commercialisation of assistive device technologies developed by IRL. By working with ITRI, we have been able to focus on bringing down production costs and seek out manufacturing opportunities.

As part of our active IP and commercialisation management, we have established a portfolio identifying and prioritising all current IP and commercialisation activity and specifying targeted initiatives to strengthen our future IP pipeline.

Patenting Activity 2008/09

New patents granted – New Zealand	5
New patents granted – Overseas	67
Licensing arrangements entered into	3
Joint ventures	1



There are a number of ways we work with companies to commercialise our R&D and the following are just some of the examples.



Joint venture for HTS Roebel cable manufacture

IRL formed a joint venture company with General Cable – General Cable Superconductors Ltd (GCS) – in December 2007 to commercialise IRL's HTS Roebel cable manufacture. Eighteen months on, the joint venture company is reporting a successful year during which the first deliveries of HTS Roebel cable have been made to local and international customers. These include two deliveries to German-based electrical and electronics multinational Siemens, which is using it in a new line of utility generators that will be more efficient producers of energy and are able to operate across a wider range of load conditions. Another customer for the HTS Roebel cable has been IRL associate company HTS-110. This order marks the first time these superconductors will be used in an AC magnet. Using HTS cable means the magnet is subject to lower AC power losses during operation than traditional magnets using copper wire. GCS is also negotiating delivery of test lengths of cable for some of the world's premier institutions in the fields of particle accelerator technology and high field magnets. While the sales to date are for small quantities of cable totalling around 20 metres, the high price it fetches means those sales have brought in substantial revenue.

As well as supplying cable for the FRST-funded 1MVA HTS transformer project, the joint venture company has had international expressions of interest in applying the cable to transformers and other power equipment. During the year, GCS has continued to build up its manufacturing capacity and capability so it can meet the volume and quality benchmarks needed to establish HTS Roebel cable as a key enabling product to help HTS become a mainstream technology.



The IP options approach

In June 2009, IRL signed a \$300,000 agreement with Nutriventures Ltd, the major shareholder of Nelson-based natural products company Nutrizéal, giving the company the option to license new IP from IRL lipids research. IRL has a long-standing partnership with Nutrizéal, which manufactures a range of natural products for the food ingredient, nutraceutical and animal health industries. Under the agreement, Nutriventures will provide annual co-funding, with FRST, of the IBT Group high-value lipids project. This uses IRL's expertise in supercritical extraction to isolate these valuable ingredients from a range of biological raw materials to assist Nutrizéal to extend its product range. Nutrizéal's Process Development Manager and chairman of the Nutriventures IRL Development Alliance, Andy Herbert, says the collaboration works for both companies. "IRL's expertise in R&D and Nutrizéal's in manufacturing and product development is a winning combination that can provide huge benefits as a one-stop shop to our customers here and overseas. Through collaborations such as this we can better add value to New Zealand's economy through new products made by world-class technology."

Among the research projects IRL is working on with Nutrizéal is extracting oleoresins from herbs. These have antioxidant properties and are used to stabilise fresh meat and fish during processing and storage. They also have industrial applications, for example in plastics. IRL's Supercritical Extraction researchers have found they can recover a greater proportion of the oleoresins present in plant material under a technique they have developed than is currently possible using conventional CO₂ extraction methods. The IRL technology also allows for greater separation of the antioxidant elements to provide a wider range of products that can be specially tailored to specific uses. The aim is to eventually establish an industry in these compounds based on herbs grown in New Zealand.

Research synergies

IRL recognises that in some instances it is in our interests to partner with another company, or companies, to ensure the best possible outcome technically and commercially. An example is the partnership between IRL's Engineering and Applied Physics Group and Spark, a company that supplies software to the health sector. Spark has considerable skills and experience in developing imaging methods and visualisation software and, as a consequence of their close relationship with practising clinicians, an understanding of what "works" in the clinical setting. By partnering with Spark, the IRL scientists are able to focus on developing new sensing technology and electronic hardware aided by the visualisation tools from Spark. The result is products that, because they combine IRL's science expertise with that of Spark, are an improvement on the existing products and meet clinicians' practical needs. Projects under this partnership have been beneficiaries of Pre-Seed investment.



^ Harry Chen, Frederic Lecarpentier and Ross Kemp
– IRL's research team working with Spark

Technology transfer

One of IRL's foremost science areas is in supercritical fluid extraction – a process that uses CO₂ and other gases at high pressure to extract valuable compounds from natural materials such as plants and the raw materials produced by New Zealand's primary sector. The process leaves no solvent residue in the product and can also be used as an environmentally friendly method of drying materials. As a result, it is a process that has huge potential for companies wanting to produce novel food products using specialty natural ingredients and for nutraceutical and cosmeceutical products. To showcase how IRL's extraction technologies could help local companies add value to their existing products and introduce new products for market, the IBT Group, with the help of local engineering companies, designed and constructed in-house a portable supercritical extraction unit – known as Superex. It is available for hire by companies to gauge the benefits of supercritical fluid extraction for themselves.

IBT scientist Steve Tallon says since Superex went on the road around two years ago, it has helped transfer the technology to a number of companies. "By hiring the pilot plant, companies get first-hand experience of, and familiarity with, the technology through pilot-scale, short-term projects without having to go to the huge expense of buying in the specialist equipment." A technician travels with the unit to train staff on how to use it.

To date, Superex has been used by companies in the marine, dairy, horticulture and forestry sectors to test potential new products.



^ Owen Catchpole and Steve Tallon
– with IBT's Superex unit